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SESSION 4.2:
SOLUTIONS FOR RESILIENT FOOD AND NUTRITION SYSTEMS OFF-FARM

Panel Q&A

Ben Fargher¹, Dr Warren T K Lee², Dr Fathiya Khamis³

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Chair: Larelle McMillan, Research Director – Sustainability,
CSIRO Agriculture & Food

Q: Tony Fisher, Canberra, ACT Crawford Fund Committee

My question is to Dr Khamis. Wonderful talk. Very exciting. But all those insects look very identical. I'm wondering what genetics are behind the soldier fly and what is the risk of pathogens getting into your black soldier flies?

A: Fathiya Khamis

For the genetic aspects, yes, they are alike. In fact, we did some work to see the differences between the populations from so many regions of the world, but mostly they just genetically link up. There's not much variability because the sources are the same. For the farmers, they have mostly one source of obtaining their starter culture. So diversity or variability is quite low between the populations. For pathogens, yes, of course you can use different waste streams for rearing BSF, but they also have a cleaning mechanism, where after taking them from the substrate, you don't find these pathogens move into the BSF gut because they have a way of cleansing. So, yes, we have some organisms in the gut of the BSF, and normally after making the products we do biosafety checks through microbial analysis. And we have found that the products are quite clean when using the right rearing substrates streams.

Q: female, Charles Sturt University

What is the process of importing black soldier flies? I was recently in Timor-Leste and I mentioned black soldier flies and they asked, 'How do we get them?'

A: Fathiya Khamis

It depends on the country's policies. We follow the protocols of the Convention on Biological Diversity and also the policies of the countries. Once you have permits, and the country of origin has permits, it's easy to collaborate and ensure that you get the live insects.

Q: Peter Wynn, New South Wales Crawford Fund

A question to Ben. To what extent are you going to use robotics or adopt robotics in your processing chains, and are there any implications for local jobs markets?

A: Ben Fargher

Good question. Certainly, we are looking at all that new technology that's happening around the world, in terms of driving efficiency. Not just robotics, but even AI which is a big topic of conversation now of course. It's about how you can use it for optimal growth. In talking about resiliency of food systems, for example, if you can use that technology to predict and scenario-plan shocks, impacts, scenario-plan pandemics, scenario-plan conflict events, then you can make your

food systems more prepared – and that’s another resiliency point. So, any new technology that makes sense, we’ll look at. But of course, we need to be conscious of employment. Like many businesses in Australia and many businesses around the world, we are often challenged to find labour, and labour shortage is a massive issue for global agribusiness, let alone global business as a whole. How we recruit and how we induct and how we train and how we support our employees around the world is a big consideration, including the diversity of that employee base: I didn’t have time to get that today. Certainly those impacts and how they interface with the regional communities is vitally important to us.

Q: Julia Checco, PhD student, The University of Queensland

I’ve heard that the technology for insect farming can be expensive. Are there future opportunities for smallholder farmers to do insect farming?

A: Fathiya Khamis

We deal a lot with small- and medium-scale farmers, and we give them starter kits of the insect culture to start with. Actually they find it’s cheap to do, because they use the waste from their farms – chicken waste or chicken manure – for rearing the insects. They also use biomass from their harvests and from other waste. So eventually it becomes cheaper for them to maintain the BSF with these wastes that they produce. In turn, they get fertiliser, and the frass fertiliser is better than them using their chicken manure as fertiliser. Also they use the live insects to feed their poultry. They also have other business streams to help cover the costs, so eventually it becomes cheaper for the farmers to do the insect farming.

Chair: Larelle McMillan

Dr Khamis, I think you have instigated quite a lot of questions around the black soldier fly. Your contact details are in the conference app, so for those who would like to follow up further on the circular economy aspects of black soldier fly as a case study, I encourage you to do that. Please all join me in thanking our speakers today. Thank you, Ben. Thank you, Warren. Thank you, Fathiya.

For the bios of these three speakers, see their conference papers.